Bison
The Amazing Animal

Bison are wild animals. Although they are now raised commercially—the Kansas Buffalo Association currently has 107 members raising 8,600 animals—bison do not have the same temperament as their domesticated cattle relatives. Bison, or buffalo, appear docile when grazing and ruminating, but the mind behind the massive forehead and curved horns still thinks the way its ancestors thought. It is an animal that prefers to run, but it is ready to fight when threatened.

Humans and bison have interacted for thousands of years in North America, but that interaction until recent times has been characterized by humans as predators and bison as the prey.

The earliest evidence for bison hunting comes from distinctively made projectile points found in association with extinct forms of bison dating to around 8000 B.C. Further evidence is seen among bison bone refuse commonly found in archeological sites of American Indian camps and villages in all subsequent time periods. This long-term relationship ended suddenly and dramatically in the latter portion of the nineteenth century when the North American buffalo was hunted almost to extinction by commercial hide-hunters.

In Kansas, the period from 1870 to1874 saw the confluence of a number of factors contributing to the sudden disappearance of once numerous herds. A demand from the eastern United States for bison products, both meat and hides, coupled with the arrival in western Kansas of railroad lines that provided the means for cheaply and efficiently transporting those products, led to a massive killing of bison. The killing was unregulated and thorough and was condoned by the U.S. and state governments, anxious to subdue free-roaming Indian tribes who depended upon buffalo for food, materials for shelter, and numerous other necessities, as well as for spiritual needs. Small remnant herds of bison remained after the departure of the hide-hunters, surviving for a decade or so in the rough country drained by the Canadian River and its tributaries in the Oklahoma and Texas panhandles. By 1888, when C. J. "Buffalo" Jones went searching in this region for bison to capture alive, he found a total of 37 animals.

Ancient Bison on the Plains

Bison first came to North America during the middle Pleistocene (Ice Ages), and they have been resident here for hundreds of thousands of years. At approximately 8000 B.C., some Pleistocene animals, such as the mammoth, camel, and horse became extinct. However, the bison survived beyond this time to became the largest land animal in North America. Larger than today's buffalo (*Bison bison* and *Bison athabascae*), skeletal remains of extinct forms (such as *Bison latifrons*, *Bison alleni*, and *Bison antiquus*) can be recognized primarily by their continued diminution in overall size and smaller horn cores, which also change in shape.

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These characteristics seem to point to a relatively straightforward evolution of the animal from the larger Pleistocene forms to the smaller present-day animals, although the causes of this evolutionary change are debatable. For one thing, bison species continued to enter the New World over a lengthy period of time, as the ice-free corridor opened and closed in response to climatic changes. It is not certain whether the new arrivals were additions to the existing herds (and gene pools) or replacements for buffalo species that died off. Perhaps the new arrivals coexisted with established species but did not breed with them.

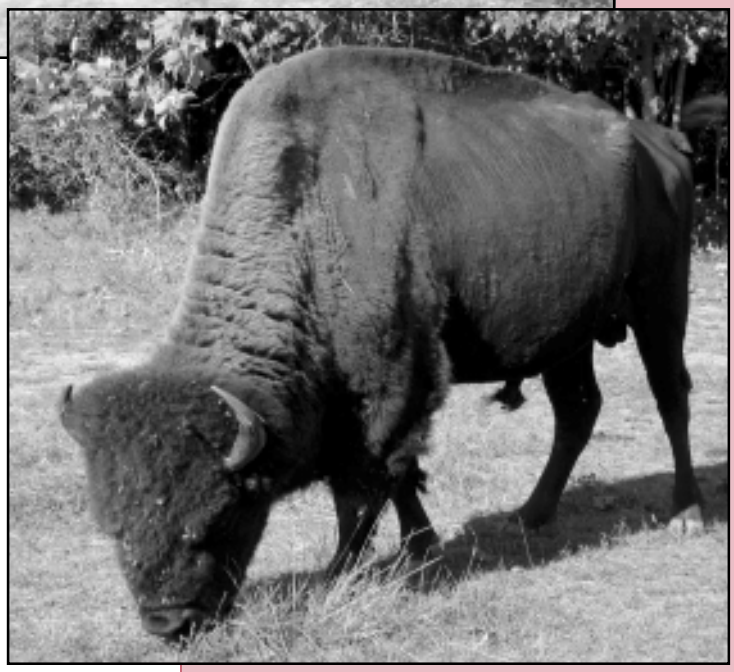
Some scientists argue that the differences in skeletal remains that are used to distinguish species are, in some instances,

only variations to be expected in a "normal" population. This would mean that instead of classifying two species from a skeletal population, there should be only one. Others believe that prehistoric bison hunters were a contributing factor in the evolution to smaller size bison. Their argument is partly based upon the hunters' preference for prime animals versus older, ill, or injured animals that typically are eliminated by natural selection. They contend that some hunting methods, such as the bison drive—wherein herds or large segments of herds were trapped or driven over natural obstacles to their deaths—were a contributing factor to the development of faster maturing, but smaller animals.

In western Kansas, the Twelve Mile Creek site in Logan County yielded the remains of at least ten animals, killed around 8000 B.C. The Norton bone bed in Scott County contained the remains of eight or more bison deposited in an ancient gully approximately 9,000 years ago.

Another High Plains bison kill site that illustrates the potential human impact on ancient bison (*Bison occidentalis*) is the Olsen-Chubbuck site, located approximately 30 miles west of the Kansas state line near First View, Colorado. At this location, the remains of 190 animals were uncovered in a wide and deep gully that, ironically, had been formed by the erosion of a buffalo trail. A herd had been stampeded across the gully. Animals in front fell into and filled up the chasm, providing a bridge for those that followed. The excavated bones of the unfortunate animals killed in the gully came from both male and female adults, juveniles, and calves. Animals in the upper part of the gully were butchered by the hunters, but those at the bottom were inaccessible, comprising 40 whole or almost complete skeletons. This site also dates to approximately 8000 B.C.

Archeology can contribute to an understanding of the natural history of the bison through the excavation of such sites. Although the hunters disarticulated the skeletons and modified some bones, they also left behind datable materials, such as charcoal from camp fires and



A mature bison bull will weigh approximately 2,000 pounds. The animal can run at speads up to 30 miles per hour and is capable of quickly changing course. The strongest bull will be the dominant animal in the herd, but the dominant cow will be the herd leader.

Bison calves weigh between 25 and 35 pounds when they are born. They are weaned at about six months.

This two-part article by Martin Stein examines the theme of Kansas Archeology Week 2002, "Bison: Animal and Icon." Part one provides information about the natural history and nature of the bison, or buffalo as it is more commonly called. Stein is an archeologist with the Cultural Resources Division, whose principal assignment currently is preparing the report for the archeological excavations in the Arkansas City area in the mid-1990s.

Facing a Stampede

Canadian artist Clarence Tillenius observed the running buffalo in a Wood Buffalo National Park bison herd stampede, arranged for his benefit. He hid in a log pile for protection from the animals. In his article, "An Artist Among the Buffalo," published in* Buffalo *(see suggested reading at the end of the article), he reported the experience.

Now I was for it: and with that realization came a disquieting thought. The wardens had said the herd would split when they reached the log pile: but would they? I knew that some of those massive bulls weigh well over a ton: would a few logs be any obstacle to them? The wardens had also cautioned me that a buffalo herd's splitting to either side of me depended on my showing myself in time. The danger lay, they told me, in letting the buffalo get too close before popping up, since a buffalo might then in sudden anger or panic hook me as it ran by. ...

A low muttering sound like distant thunder growing steadily louder warned that the time for second thoughts was past. With the wind blowing crossways suddenly there hove into view above the bushes an undulating brown line—the backs of the oncoming buffalo herd. They thundered down on me, but at the last moment divided as they reached the log pile I was crouched in. Four or five cows caught my scent as they went by: they wheeled and bounded up to the log pile grunting menacingly. Moments later they spun round and followed the vanishing herd. Safe in my log pile, I breathed easier and spent the rest of the afternoon recreating in my mind the impressions and appearance of the oncoming herd and putting those impressions down on paper.

Buffalo, when running hard, even after a comparatively short distance, give a misleading appearance of fatigue. Their tongues seem to hang out a foot; the peculiar rocking gait might lead one to think that they are tiring. Nothing could be farther from the truth: buffalo are fiercely enduring; when in running trim, the cows especially can run all day, so that only the fleetest horses can overtake them. The big bulls, because of their greater bulk, resent being made to run and will eventually stop and turn to give battle to whatever pursues them. The enormous head and fore-shoulders of a full-grown bull are so imposing and ponderous that it is almost incredible to see the ease with which the big bull whips around to meet a rival or face an enemy. The secret is the almost even balance of his great weight over the short sturdy forelegs; the momentum of the heavy head swinging to the side seems to flip the lighter hind quarters like a top in the opposite direction. Buffalo can be treacherous and it is well not to trust them too far, especially at those dangerous times when the cows are protecting their small calves and when the bulls are in the seasonal rut.

projectile points or other artifacts representative of certain time periods. This chronological information can be valuable. Some sites, such as Olsen-Chubbuck, also contain complete animal skeletons to provide study specimens.

Saved from Extinction

The natural history of the bison has many blank pages, but due to the efforts of a few individuals, the buffalo were saved from extinction and the bison book was not closed forever at the end of the nineteenth century.

C. J. "Buffalo" Jones of Garden City was one of those individuals. A flamboyant promoter, he captured (by roping) calves from the few remaining bison in the region for various schemes, including a buffalo-drawn streetcar system for Garden City. The herd that grew from this roundup provided ten animals for a private zoo at the turn of the century for a cost of $1,000 each. This compares with the price of $2.50 for a bison robe scarcely ten years earlier. Jones became warden at Yellowstone Park in 1902, overseeing the last remaining bison on public land, a small herd of 25 animals. In 1906, he started a ranch on the north rim of the Grand Canyon stocked by "cattelo," his term for a cross between buffalo and Galloway cattle. This attempt to combine the best attributes of both animals was not commercially successful.

Early in the twentieth century, most buffalo were found in private herds, as is true now at the beginning of the twenty-first. Publicity about the near extinction of the animal led to the founding of the American Bison Society with William Hornaday, chief taxidermist at the U. S. National Museum, as president. This organization spearheaded efforts to stock bison on public land, so that by 1915 bison herds had been established in the Wichita Mountains National Wildlife Refuge (NWR) in Oklahoma, Fort Niobrara NWR in Nebraska, and Wind Cave National Park and Custer State Park in South Dakota.

Ernest Harold Baynes, a New England journalist, was instrumental in forming the American Bison Society and in publicizing the need to save the buffalo. Anxious to promote the usefulness of the animal, he advocated using buffalo wool (the hair that grows over the front part of the animal) in blankets and articles of clothing. He also recommended bison as strong draft animals. Neither of these beneficial uses panned out; they floundered because of the nature of the buffalo. How does one shear a living bison? And although some individual animals took to a harness, the vast majority—even those raised from young calves by humans—were too unmanageable for the task.

The Nature of the Beast

Some bison characteristics have been constant for thousands of years. A bison herd's propensity to run in headlong flight at a perceived threat was used to advantage by those American Indian hunters responsible for creating the bone bed that filled the gully at the Olsen-Chubbuck site. This strategy also figured into the creation of the massive bison bone deposits at the famous buffalo jumps of the Northern Plains, such as the Head-Smashed-In jump in Alberta, Canada. At this site and similar sites in

the northern United States, buffalo herds were gathered together and driven over high precipitous cliffs by the coordinated actions of the on-foot hunters, who used concealment and then their sudden appearance to guide the running bison to the cliff; the resulting fall killed or injured the animals. Hunters used the same locations over and over again for many thousands of years.

With the reintroduction of the horse into North America by the Spanish in the sixteenth century, some tribes altered their buffalo-hunting tactics. Mounted hunters would chase the animals on fast and fearless horses, chosen especially for their ability to run close to the bison where their riders could shoot arrows or fire bullets into the selected animals.

In 1872, hides shipped from Dodge City numbered 165,721; in 1873 there were 251,443; and in 1874 there was a reduction to 42,289—a total of 459,453 bison hides. This figure does not include animals killed but not skinned or buffalo hides that spoiled in the field due to the inexperience of the hunters.

Another less dramatic, but equally efficient, way of hunting bison relied on using a combination of the animal's poor eyesight and keen nose. By keeping downwind of a herd and by using stealthy movements, hunters could sometimes approach quite closely. Indians, using wolf skins or blankets draped over their bodies, could get within arrow-shot range using this method.

Nineteenth-century hide-hunters could sometimes establish a "stand" within rifle range of a herd and be able to shoot bison after bison from one position. The key to this hunting method was to avoid spooking the herd with sudden movements—either by the hunter himself or by, for instance, only wounding an animal that caused its sudden movements to alert the herd to danger. Apparently the loud report from the rifle's discharge was not a factor.

Such tactics as these, plus the number of hide-hunters operating in the field, caused an incredible number of bison to be killed. Colonel Richard I. Dodge, a contemporary observer of the slaughter, obtained figures from the Atchison, Topeka and Santa Fe Railway for three years of hide shipments from Dodge City. In 1872, hides shipped numbered 165,721; in 1873 there were 251,443; and in 1874 there was a reduction to 42,289—a total of 459,453 bison hides. This figure does not include animals killed but not skinned or buffalo hides that spoiled in the field due to the inexperience of the hunters.

The rebound in numbers of buffalo in the twentieth century can be attributed partly to their ability to reproduce and their adaptation to the Plains environment. A buffalo cow can breed at two years of age and have her first calf at age three. Under optimal conditions, a cow can have a calf each year of her 20- to 25-year life span.

Bison eat a wide range of grasses and plants, typically gaining weight during the spring and summer but losing weight during the winter months. Unlike cattle, bison can move away snow with their snouts to reach buried winter grasses, which allows them to be self-sufficient and to survive extreme weather events. Bulls in prime can weigh around 2,000 pounds, while a mature cow will weigh approximately 1,100 pounds.

Although bison have not rebounded to their former numbers, there are today approximately 350,000 located on private and public lands. Bison meat and bison products are generally available to the public, and bison can become a part of an individual's diet if one so desires.

Bison research is carried on at several institutions in the Plains states, including the Konza Prairie unit of Kansas State University. In Kansas, public viewing of bison herds is available at the Maxwell Wildlife Refuge near Canton in McPherson County and at the Finney Game Refuge near Garden City. Surplus bison from the Finney and Maxwell herds are sold at auction at the Maxwell Wildlife Refuge during the first two weeks of November each year. Further increases in the bison population of North America will need to come through an increase in the number of privately owned herds.

Suggested Reading

Foster, John, Dick Harrison, and I. S. MacLaren
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Geist, Valerius
1996 *Buffalo Nation: History and Legend of the North American Bison*. Voyageur Press Inc., Stillwater, Minnesota.

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1958 *Buffalo Jones: A True Biography*. Elliot Printers, Garden City, Kansas.

McHugh, Tom
1972 *The Time of the Buffalo*. University of Nebraska Press, Lincoln.

Roe, Frank G.
1970 *The North American Buffalo*. University of Toronto Press, Toronto.

Schultz, C. Bertrand, and Larry D. Martin
1970 *Quaternary Mammalian Sequence in the Central Great Plains: Pleistocene and Recent Environments of the Central Great Plains*. Special Publication No. 3. Department of Geology, University of Kansas, Lawrence.

Wheat, Joe Ben
1972 The Olsen-Chubbuck Site: A Paleo-Indian Bison Kill. Memoir No. 26 of the Society for American Archaeology. *American Antiquity* 37(1)Pt. 2.

Selected Web Resources

Appropriate Technology Transfer for Rural Areas (www.attra.ncat.org)

National Bison Association (www.bisoncentral.com/nba)

North Dakota State University Bison Research Program (www.ag.ndsu.nodak.edu)

Temple Grandin (www.grandin.com/references)

The Bison Centre of Excellence in Alberta, Canada (www.bisoncentre.com)